

Chehalis Basin Flood Mitigation Alternatives Report *and* WSDOT: I-5 Protection from 13th Street to Mellen Street

Draft Response to Comment Summary October 16, 2012

The Ruckelshaus Center draft *Chehalis Basin Flood Mitigation Alternatives* (Alternatives) report was available for public comment from July 16 to August 31, 2012. The Washington State Department of Transportation (WSDOT) draft *I-5 protection from 13th Street to Mellen Street near Centralia and Chehalis* report, which will be included as an appendix to the larger Alternatives report, was available for public comment from August 17-31, 2012.

This summary was developed for discussion with the Chehalis Flood Authority at its October 18, 2012 meeting. Input from the meeting will be considered in the final responses to comments. The Alternatives Report and WDOT Report will be finalized and publically available in December 2012.

A total of 49 comment letters or emails were received on both reports, with 36 on the Alternatives Report and 13 on the WSDOT report. Responses for each comment will be summarized in a spreadsheet that will be available when the final reports are published. This document summarizes the main themes from the comments on both reports and draft responses.

Alternatives Report – comment themes and responses

Personal Stories and Support/Opposition to Water Retention

Of the 36 comments received on the Ruckelshaus report, 28 were personal reflections and stories on the impacts of flooding in the Chehalis Basin or brief comments on a preferred flood mitigation alternative. The majority of commenters expressed support for a water retention project on the upper mainstem Chehalis and expressed the opinion that such a facility is needed to provide flood protection for residents in the Basin. Fewer commenters expressed opposition to a dam, and instead advocated for other measures such as prohibiting new development in the floodplain, raising or buying out structures already in the floodplain, improving local government land use management practices, and improving forest practices to provide flood protection.

The final report should continue to acknowledge the diversity of concerns and perspectives on the dam, and highlight the importance of a Basin-wide solution that includes a balance between the potential for large-scale capital projects, such as a dam and/or I-5 improvements with smaller, more localized projects and programmatic actions.

Hydraulic Model

Some commenters identified a variety of limitations and concerns with the hydraulic model or the modeling effort. The draft report recognizes that this hydraulic model, while an improvement over past efforts, still has areas of uncertainty and potential inaccuracy, and that additional improvements should be considered for the future. The draft report recognizes that the model predicts potential outcomes. The final report should clearly reinforce this point by more consistently stating model results using terms such as *probable*, *anticipated*, and *possible*.

Commenters also highlighted the need to describe results for all storm types modeled, given that each storm event was unique. For example, the report stated that in a 2007 event, the model predicts that a dam would reduce flood elevations in Montesano by almost two feet. While this is correct, in the 1996, 2009, and 100-year events a dam is predicted to reduce water levels by only 0.3 feet, 0.1 feet, and 0.7 feet, respectively. The final report should be edited to more completely describe the changes in flood elevations that are predicted in different types of storm events, and to reinforce the overall point that flood elevations in the Basin can vary significantly based on the type of storm event.

Fish impacts from water retention

Some commenters expressed concern over the Anchor QEA Fish Impact study and felt that the Alternatives report overestimates the potential benefits to fish and water quality that may result from a dam. These commenters felt that the Anchor report's conclusions are inaccurate and misleading, and that the report does not adequately take into account water quality, water quantity, return rates for salmon and other factors.

The draft report states that there are significant uncertainties with the Anchor results and acknowledges the need for the necessary biological studies that must be completed if a water retention project moves forward. These studies would allow for a more accurate prediction of the impact of a dam on fish and the environment; this point should be reinforced in the final report.

Corps Twin Cities Project

Some commenters felt that the report should provide a better discussion about the alternatives the Corps has presented on how to proceed with the "Twin Cities Project", given that that the project now does not have a positive benefit-cost. The final report should better reflect concerns such as if the Twin Cities project is terminated, the Basin may no longer have as ready access to that form of federal funding, and to acknowledge that there are potentially enough cost-effective parts of the existing project or appropriate revisions to reformulate it under a General Reevaluation Report.

WSDOT Report – comment themes and responses

Express Lane and Temporary Bypass Alternatives

Of the 13 comments received on the WSDOT report, eight were from local residents of the Westside Chehalis neighborhood expressing opposition to the Express Lane and Temporary Bypass project alternatives. These commenters are concerned that, if constructed, either of these alternatives would decrease their property value and business revenue, increase air pollution, noise levels, and traffic volume adjacent to and through the project area, and increase the flow of water in and through the neighborhood during major flood events. At an August 23, 2012 public meeting, local residents and business owners from the Wilco Agricultural Center, CENEX, Chehalis West Assisted Living, and National Frozen Foods expressed similar concerns. The Lewis County PUD also commented that the Express Lanes or Temporary Bypass would impact a project being built where the Tacoma Rail track borders PUD property at Main and Quincy Avenues in Chehalis.

WSDOT acknowledges these concerns and the final report should be updated to better reflect the potential impacts to homes and businesses in the Westside Chehalis neighborhood.

Need to better reflect potential environmental impacts

Some commenters noted the need to better reflect the potential environmental impacts, both positive and negative, that could result from the project alternatives.

Early in the feasibility evaluation process, it is difficult to be precise about environment impacts. WSDOT factored the cost of potential wetland mitigation needs into cost estimates for each of the alternatives. However, because the alternatives are still in a preliminary design phase, the report does not include specific estimates of mitigation for wetlands, fisheries, or other environmental impacts. Further consideration of any of the alternatives will entail additional analysis related to environmental mitigation and, if projects move forward, as part of the necessary environmental permitting.

Focus on I-5 protection

Some commenters expressed concern that project alternatives do not do enough to provide flood protection for surrounding communities, and instead focus only on I-5 protection.

The WSDOT report was written to address only Section 1033 (2) (c) of ESHB 2020. This section states “evaluate alternative projects that could protect the interstate highway and municipal airport at Centralia and Chehalis, and ensure access to medical facilities ...”. The WSDOT report was not intended to address other potential projects or components that may be considered as part of a basin wide solution(s).

The final report will more clearly describe the context for the I-5 protection analysis – it is but one component of a broader effort to summarize existing information on alternatives to mitigate flood damage in the Chehalis Basin. The alternatives described are focused on I-5 protection because that is the focus of the report; however the final report should more clearly describe protection of I-5 as only one potential component of a broader set of flood hazard mitigation efforts needed in the Basin and

refer more clearly to the larger effort to determine a path forward for flood hazard mitigation in the Basin, of which protection of I-5 is only a part.

Effect of a dam

Some commenters expressed concern that the report overemphasizes the merit to surrounding communities of the Walls and Levees alternative and deemphasizes the potential benefits if a dam were constructed, and that the tables showing model results for effects of alternatives could be misleading.

The legislative purpose of this report was to evaluate alternative projects that could protect I-5. The full Alternatives report addresses other potential projects. The final report should more clearly define its intent and context. It also should more clearly describe the potential effects of a dam, including a clear statement that a dam would lower flood elevations throughout the Basin and would, therefore, reduce the amount of effort needed to fully protect I-5 during major flooding and the costs of I-5 protection.

Freeboard standard

Some commenters felt that WSDOT's determination that freeboard must be three feet above the 100-year flood level was excessive.

WSDOT agrees that it is extremely important to identify the right measurement for freeboard. The right amount of freeboard will provide confidence that, no matter what flood protection measures the legislature directs WSDOT to build, they provide protection for predicted floods in the project area.

As described in an Appendix to the draft report, WSDOT determined that freeboard must be three feet above the 100-year flood level. This amount of freeboard is in alignment with the freeboard the Army Corps of Engineers has been using for the Twin City project including the protection of I-5 for the past decade. It equates to a minimum of one foot above the 2007 flood level in the Chehalis-Centralia area. This measurement was established through analysis by WSDOT's State Hydraulic Office as sufficient to cover a potential future water flow increase of 25 percent.

Given variables within the Chehalis River Basin due to development, land use, climate change, etc., this measurement would have protected I-5 in the 2007 flood, which was in excess of a 100-year flood event. The following factors contributed to WSDOT's determination of freeboard. Each of these factors is described more fully in an Appendix to the draft report.

- *Safety and economic risks* – in particular, there are significant safety risks if I-5 were to be inundated;
- *The size of the investment* – any investment to protect I-5 will be substantial and there should be confidence that it will reliably prevent I-5 closures;

- *Frequency and variability of flood events in the Chehalis River Basin* – each flood event is different, and I-5 protection must work across the full range of event types;
- *Difficulty precisely predicting flood levels and complexity of flood hydrology* – because of its landscape and proximity to multiple water sources, there is significant variability in how flooding occurs in the Centralia-Chehalis area. When flooding predictions raise a serious risk that I-5 may be overtopped, safety concerns prompt a conservative decision about closing I-5. In addition to the threat of overtopping, serious concerns over the structural integrity of the Airport levee have contributed to decisions to close I-5. During the last flood events there have been significant boils developing near the levee; these can cause the levee to breach instantly which would fully inundate I-5 very quickly, posing a serious safety risk; and,
- *Time required to close I-5* – because it takes time to safely and effectively close I-5, decisions to close the interstate must be made well in advance of potential flooding impacts.

Tables describing potential impacts to homes and businesses

Some commenters were concerned that the tables describing potential impacts to homes and businesses were confusing or misleading. The final report should describe how the tables were generated in more detail so readers can more easily understand that they are intended only to provide a consistent point of comparison across options; the final report should acknowledge that to accurately predict actual damages expected during flooding further analysis would be needed on parcel elevations and on the locations of homes and structures within parcels.

Hydraulic model results

Some commenters were skeptical of the accuracy of the hydraulic model results, both from the perspective of downstream impacts and from the inundation maps provided as appendices. Specifically, for the Walls and Levees alternative commenters questioned the accuracy of the predictions of increases in downstream elevation (from Mellen Street) of 0.1 to 0.2 feet, and for the inundation maps commenters questioned the accuracy of the prediction of flood elevation reductions in the I-5 corridor on the east side of the freeway of 1.4 feet.

The Walls and Levees along I-5 alternative would restrict flow from passing to the east side of I-5 and into the Twin City area during significant flood events. Under the current conditions, (i.e., without the walls and levees), Chehalis River flows are stored and conveyed along the east side of I-5 during large storm events such as the one that occurred in December 2007. By placing walls and levees along I-5, the amount of water flowing from the Chehalis River to the east side of I-5 would be reduced; a greater portion of floodwater would stay between I-5 and the western valley wall. This water does eventually pass downstream, although some of the flow is temporarily backed up behind the Mellen Street Bridge, a narrow point (constriction) in the floodplain. When the airport levee is raised in conjunction with the I-5 Walls and Levees alternative, an additional location of floodplain narrowing occurs, further backing up flood waters. Under these scenarios, the flood elevations along the Chehalis River are predicted to

increase up to 1-2 feet for the December 2007 event at some locations between I-5 and the western valley wall. The increase in water surface elevation is predicted to be on the order of 1 foot for the 100-year event.

The predicted change in water surface elevations downstream of Mellen Street and the Chehalis River/Skookumchuck River confluence caused by the Walls and Levees alternative is significantly less during events such as the December 2007 and 100-year floods when compared to the change upstream of Mellen Street. This is due, in part, to the narrow opening at Mellen Street which limits downstream discharges. The timing of flows in the Chehalis River and their coincidence with Skookumchuck River flow is also affected. Simulations indicate that the change in downstream water surface elevations are on the order of plus or minus 0.1 feet. Larger changes in water surface elevations are seen in the area downstream of the Chehalis River/Skookumchuck River confluence with other combinations of flood protection features, such as the Corps Flood Reduction Project. Part of the reason that the Walls and Levees alternative does not cause much of a rise downstream of the Skookumchuck is that the proposal does not include any physical changes to the floodplain in this area and as such, the flood flows are free to spread across the entire floodplain as they currently do.

Projects that do not seem to warrant further evaluation as part of a Basin-wide solution to flooding

The draft report summarizes information on a wide variety of projects, many of which have been the subject of considerable study and some of which have been under discussion in the Basin since before the floods of 2007 and 2009. In addition, in the last year, for the first time it is possible to model the potential effects of projects Basin-wide, using the new Basin-wide hydraulic model.

It seems prudent in the final report to more clearly articulate the conclusions that can reasonably be drawn from this work, namely that a number of projects simply do not seem to warrant further evaluation because they could not provide significant flood damage mitigation to contribute in a meaningful way to a Basin-wide solution and/or because they have unacceptable environmental or natural resource impacts. These projects seem to be:

- Large scale dredging of the Chehalis. The dredging contemplated would create a 120 foot bottom width, trapezoidal channel, and would lower the channel bottom by as much as 15 feet in some locations (tapering into the existing channel at the upstream and downstream ends). Because of the substrate in the area, blasting would be required to establish the channel. Part of the area under consideration for dredging have good quality spawning habitat adjacent to it in the Chehalis River, and have a high quality riparian zone with seasonally connected side channels. As with any dredging, operation and maintenance certainly would be required. Peak flood elevations might be reduced by up to 2 feet in the Centralia/Chehalis area; however, by the Grand Mound gauge dredging would have no effect on flood levels or would slightly raise flood elevations.

- The Corps levee projects, including modification of the Skookumchuck dam. Taken together the proposed project elements would not have protected I-5 during the 2007 flood, would have increased flooding upstream and downstream and, at a cost of over \$200 million, would not pass the Corps cost-benefit test.
- Moving or elevating I-5. The relocation alternative has an estimated cost of more than \$2 billion. Relocating I-5 would diverge outside of the existing interstate and cut through Centralia and Chehalis, splitting neighborhoods and impacting the urban and natural environment in and around both cities. The viaduct alternative has an estimated cost of more than \$1.5 billion. It would reduce flood elevations west of I-5 along the Chehalis River, but would increase flood elevations east of I-5 in the urban area of Centralia. WSDOT does not consider either option a feasible alternative due largely to the high costs and lack of confidence that the projects could be successfully implemented.